Rutting resistance of untreated and treated waste cooking oil in bitumen after aging condition

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ABSTRACT

Waste cooking oil (WCO) is identified as a valuable potential waste material that can enhance the performance of conventional asphalt binder for road pavement construction. This study aims to evaluate the rutting resistance of bitumen incorporating untreated and treated WCO. Waste cooking oil dosage of 0%, 3%, 4%, and 5% by weight of binder was used throughout the experiments. The dynamic shear rheometer test was conducted to determine the performance of rutting resistance test. In addition, one way analysis of variance (ANOVA) was used to determined correlation of the sample. It was found that the rutting resistance performance was decreased as the test temperature increased. The results also indicated that modified binder with treated WCO exhibited the highest rutting resistance as compared to the untreated WCO. Based on analysis of variance it show that there are a significant difference in G*/sin δ for different untreated and treated WCO in modified binder.

KEYWORDS:

Waste cooking oil; asphalt binder; bitumen; rutting resistance